

CLAIMS:

1. A planetary gearset provided with a sun gear, a ring gear, and a carrier that rotatably retains a plurality of pinion gears arranged between the sun gear and the ring gear, as elements, in which one of the elements is a fixed element and another element is a rotating element, the planetary gearset transmitting torque between that rotating element and an external member provided eccentric with respect to the rotating element, characterised in that:

the fixed element is retained so as to be able to move in a direction of a load from the transmission of torque between the rotating element and the external member, and the load from the transmission of torque between the rotating element and the external member is received by a fixed portion that rotatably retains that rotating element.

2. A planetary gearset characterised by comprising:

a rotating element which is one element from among a sun gear, a ring gear, and a carrier that rotatably retains a plurality of pinion gears arranged between the sun gear and the ring gear, and which transmits torque between that element and an external member provided eccentric with respect to that element; and

a fixed element which is one element from among the sun gear, the ring gear, and the carrier, that element being an element other than the rotating element, which is retained so as to be able to move in a direction of a load from the transmission of torque between the rotating element and the external member, and which is constructed such that the load from the transmission of torque between the rotating element and the external member is received by a fixed portion that rotatably retains that rotating element.

3. The planetary gearset according to claim 1 or claim 2, characterised in that the fixed element is retained on the fixed portion via an elastic member.

4. The planetary gearset according to any one of claims 1 through 3, characterised in that the fixed element is the carrier and the rotating element is the ring gear.

5. A planetary gearset in which a plurality of pinion gears are arranged in a circumferential direction between a sun gear and a ring gear which are on the same rotational axis, with these pinion gears being rotatably mounted to a carrier which is fixed so as not to rotate, the planetary gearset transmitting torque between one of the sun gear and the ring gear, and an external member which is eccentric with respect to the sun gear and the ring gear, characterised in that:

the pinion gears are arranged away, in the circumferential direction, from a location at which torque is transmitted between one of the sun gear and the ring gear, and the external member.

6. A planetary gearset characterised by comprising:

a sun gear;

a ring gear arranged on the same axis as the sun gear;

an external member that transmits torque between one of the sun gear and the ring gear, and the external member, and which is arranged eccentric with respect to the sun gear and the ring gear;

a plurality of pinion gears provided between the sun gear and the ring gear and arranged away from, in a circumferential direction, a location at which torque is transmitted between one of the sun gear and the ring gear, and the external member; and

a carrier that rotatably retains the pinion gears and which is disposed so as not to rotate.

7. The planetary gearset according to claim 5 or claim 6, characterised in that the pinion gears are arranged such that the location at which torque is transmitted lies between two of the pinion gears.

8. A planetary gearset in which a plurality of pinion gears are arranged in a circumferential direction between a sun gear and a ring gear which are on the same rotational axis, with these pinion gears being rotatably mounted to a carrier which is fixed so as not to rotate, the planetary gearset transmitting torque between one of the

sun gear and the ring gear, and an external member which is eccentric with respect to the sun gear and the ring gear, characterised in that:

more of the pinion gears are arranged in an area near, in the circumferential direction, a location at which torque is transmitted between one of the sun gear and the ring gear, and the external member than in an area away from that location at which torque is transmitted.

9. A planetary gearset characterised by comprising:

a sun gear;

a ring gear arranged on the same axis as the sun gear;

an external member that transmits torque between one of the sun gear and the ring gear, and the external member, and which is arranged eccentric with respect to the sun gear and the ring gear;

a plurality of pinion gears provided between the sun gear and the ring gear, with more of the pinion gears arranged in an area near, in the circumferential direction, a location at which torque is transmitted between one of the sun gear and the ring gear, and the external member than in an area away from that location at which torque is transmitted; and

a carrier that rotatably retains the pinion gears and which is disposed so as not to rotate.

10. The planetary gearset according to any one of claims 4 through 9, characterised by further comprising:

a plurality of pinion pins rotatably retained on the pinion gears via bearings, the pinion pins being fixed to the carrier;

an oil path that connects axial ends of the pinion pins, from the axial end of the pinion pin on an upper side to the axial end of the pinion pin on a lower side in that order, the oil path formed on the axial end side of the pinion pins so as to lead lubricating oil that runs down from above; and

an oil sump that is formed in a location corresponding to the axial end of at least one of the pinion pins, and into which the lubricating oil that runs down the oil path runs, the oil sump collecting this lubricating oil, and being intercommunicated with the bearing of the at least one of the pinion pins.

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11. The planetary gearset according to any one of claims 4 through 9, characterised by further comprising:

a plurality of pinion pins rotatably retained on the pinion gears via bearings, the pinion pins being fixed to the carrier;
a plurality of oil holes extending from the axial ends of the pinion pins to the bearings;

an oil path that connects open ends of the oil holes from the open end of the oil hole on an upper side to an open end of the oil hole on a lower side in that order, the oil path being formed on an axial end side to which the oil holes of the pinion pins open so as to lead lubricating oil that runs down from above; and

an oil sump formed in a location corresponding to the open end of at least one of the oil holes, into which the lubricating oil that runs down the oil path runs, the oil sump collecting this lubricating oil, and being intercommunicated with the at least one of the oil holes.

12. The planetary gearset according to claim 10 or claim 11, characterised in that a plurality of the oil sumps are formed, and one of those oil sumps is formed with a different lubricating oil collecting capacity than another of the oil sumps.

13. The planetary gearset according to any one of claims 10 through 12, characterised by further comprising:

a first rotating body that transfers the lubricating oil by rotating; and
a second rotating body that retains the lubricating oil transferred by the first rotating body and transfers, by rotating, that lubricating oil to a portion requiring lubrication provided at an upper end of the oil path.

14. The planetary gearset according to claim 13, characterised in that the second rotating body has formed therein a recessed portion that retains the lubricating oil.

15. The planetary gearset according to claim 13 or claim 14, characterised by further comprising:

5. a transfer portion that temporarily retains the lubricating oil in at least one of a path that transfers the lubricating oil from the first rotating body to the second rotating body and a path that transfers the lubricating oil from the second rotating body to the portion requiring lubrication.

10 16. The planetary gearset according to claim 15, characterised in that the transfer portion is a portion that picks up the lubricating oil adhered to at least one end face of one of the first rotating body and the second rotating body.

17. The planetary gearset according to claim 15 or claim 16, characterised by further comprising:

15 a pushing out mechanism that pushes the lubricating oil retained in at least one of the first rotating body and the second rotating body out in an axial direction of the rotating body, and leads that lubricating oil to at least one path from among the path that transfers the lubricating oil from the first rotating body to the second rotating body and the path that transfers the lubricating oil from the second rotating body to the portion requiring lubrication.

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18. The planetary gearset according to any one of claims 13 through 17, characterised in that an upper edge of the portion requiring lubrication (105) is higher than an upper edge of the first rotating body.

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19. The planetary gearset according to any one of claims 13 through 17, characterised in that a rotation speed of the second rotating body is faster than a rotation speed of the first rotating body.

20. The planetary gearset according to any one of claims 13 through 19, characterised in that:

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the sun gear, the ring gear, and the pinion gears are rotating members for transmitting power between a driving force source and a wheel; and

the first rotating body is coupled with one of the sun gear and the ring gear and is submersed in a main lubricating oil sump.

21. The planetary gearset according to any one of claims 1 through 9,
5 characterised by further comprising:

a first rotating body that transfers lubricating oil by rotating; and

a second rotating body that retains the lubricating oil transferred by the first rotating body and transfers, by rotating, that lubricating oil to a portion requiring lubrication provided at an upper end of the rotating element.